

MAXWELL JONES

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Double major in **AI and Math** at CMU, graduating **May 2023**

Research Interests: **Computer Vision, Deep Learning, Multimodal Machine Learning**

Skills

PROGRAMMING LANGUAGES

Python
Java
C
JavaScript
HTML / CSS
LaTeX
SQL
Julia

TOOLS/Frameworks

NumPy
Pytorch
SciPy
Unix Command Line
Git
Sklearn
Keras
Pandas
Jupyter Notebook
regex
Matplotlib
OpenCV
Slurm

COURSEWORK

15-485 Intro to Deep Learning
16-385 Computer Vision
10-703 Deep Reinforcement Learning
10-725 Convex Optimization
10-315 Intro to Machine Learning
15-281 Artificial Intelligence
15-210 Parallel Algorithms
15-213 Computer Systems
21-484 Graph Theory
15-251 Theoretical Computer Science
21-301 Combinatorics

HOBBIES/INVOLVEMENT

Panelist: AI Research @ CMU
Panelist: AI Jobs/Internships @ CMU
Judge: WWP Hacks 2022 (HS hackathon, \$5000+ in prizes)
NSBE (National Society of Black Engineers)
Origami Club
Carnegie Mellon Club Basketball

Awards

CMU · Mark Stehlik Introductory and Service Teaching Award
CMU · Senior Leadership Recognition
CMU · Phi Beta Kappa (Honor Society)

Education

Carnegie Mellon University MS Machine Learning 2024	Sept. 2023 to Current
Carnegie Mellon University BS Artificial Intelligence BS Math GPA: 4.0/4.0	Sept. 2019 to May 2023
Thomas Jefferson High School for Science and Technology High School Diploma 2019 GPA: 4.1/5.0	Sept. 2015 to May 2019

University Research

Generative Modeling Research · Carnegie Mellon University <ul style="list-style-type: none">Research under prof Jun-Yan Zhu in the Generative Intelligence LabInvestigating ability to finetune stable diffusion models on image to image translation tasks	Oct. 2022 to Current
Semi Supervised Learning Research · Carnegie Mellon University <ul style="list-style-type: none">Research under prof Nina Balcan in scalable graph-based Semi-Supervised LearningLeverage K-Nearest Neighbor graphs and Conjugate Gradient Method using SciPyPerform evaluation on MNIST, CIFAR, and common NLP datasets (20-newsgroups) with Sklearn using Bag of WordsAchieved same accuracy, 100x speedup on large graphs with respect to closed form solutions with matrix inversesUsed Image Embeddings from layer 2 of Resnet-18 adapted for CIFAR in order to clean up more difficult image classification problemAccepted at UAI 2023	Fall 2021 to May 2023

Industry Experience

Meta FAIR Labs Software Engineer/Machine Learning Intern <ul style="list-style-type: none">Co-authoring paper to benchmark algorithmic Bias Amplification of models from biased datasets.Using ResNet-18, ClassyVision and Pytorch to benchmark bias for controlled subsets of The Visual Genome datasetCreating custom datasets, running experiments with Slurm, and Cleaning Data for Image ClassificationDeveloped Scripts to run Custom Config Files using both Bash and Python for large scale hyperparameter testing/analysisManaged project tasks for myself and co-authors on Computer Vision FAIR team through weekly meetings, syncs and idea sharingAccepted at neurIPS 2022 TSRML Workshop	New York City, NY May 2022 to Aug. 2022
Meta Probability and Uncertainty Software Engineer Intern <ul style="list-style-type: none">Developed data perturbation training/evaluating/testing pipeline in Python, leveraging Pytorch for main testingTested probabilistic models including Bayesian, Ensemble, and Dropout focused networks modeled off of LeNet-5Evaluated models on perturbed image data (Random Cropping, Rotation, Jittering)Used MNIST and FashionMNIST datasets for testing, Created visualizations using Matplotlib for presentation	Remote May 2021 to Aug. 2021
Carnegie Mellon University Head Teaching Assistant 15-151 (Discrete Math), Teaching Assistant 15-251 (CS Theory) <ul style="list-style-type: none">Over 2+ years, Head TA for 50+ TAs, impacting 500+ students (Concepts of Mathematics, Theoretical CS)Responsible for hiring, providing training and assessing performance for TAsContributed significantly to course structure generation and exam creationDesign/Lead staff meetings, coordinate TA-Professor interactions, delegate TA responsibilities	Pittsburgh, PA Fall 2020 to Current
Fiat Chrysler Automobiles Data Science Intern <ul style="list-style-type: none">Worked on amount of absentee workers prediction model across production plantsSignificant increase in model accuracy for absentee worker prediction at all plants (2% increase, 5000+ employees)Improved model performance by using Random Forests and XGBoost, cross referencing crew attendance across plantsQueried data from PostgreSQL database and used Pandas library to store query results	Remote May 2020 to Aug. 2020

Projects

Cozmo Depth Map! (codebase) <ul style="list-style-type: none">Final Project on team of 2 for Cognitive Robotics at CMUProgrammed a robot to use MiDaS, a monocular depth estimation model on camera input with 8 GB GPUGiven real world sparse depth from aruco markers, calculate optimal scaling factor for relative depth mapAllow users to query any pixel on screen and output real world depth estimate	Apr. 2023
Battlecode AI Competition (codebase) <ul style="list-style-type: none">Created Java software on small team, for AI bot to compete against other teams in month-long MIT lead tournamentCombined 500+ person-hours, 2000+ lines of code in both 2021 and 2022Leveraged distributed communication algorithms and pathfinding to increase bot's effectivenessImplemented bit packing methods, Priority Queues and Stacks, and K-Means Clustering to improve performancePlaced top 10 out of 250 teams internationally(2021, 2022), 1st out of all first-time teams(2021), \$2000+ in prize winnings	Jan. 2022
TartanHacks: WalkSafe! (codebase) <ul style="list-style-type: none">Developed a Python program on team of 4 that calculates safe and efficient walking paths at night in New York CityCreated a weighted graph from crime and street data and implemented an A* Pathfinding algorithmIntegrated Open Street Map API and fetched data from NYPD crime database REST endpoint	Feb. 2020
TartanHacks: Spot your Mood! (codebase) <ul style="list-style-type: none">Competed in Carnegie Mellon's main Hackathon on team of 4Created an add on for Spotify using Python and Flask to track mood of users listeningDeveloped Vector Embeddings for mood based on Spotify API metadata and sentiment analysisUsed Euclidean Distance in the Embedding Space to execute recommendation decisionsFunctionality for both song and playlist generation based on mood factors and specific genre choices	Feb. 2021